

CLAIMS

1. A tandem gas seal assembly for forming a seal between a rotor and a casing of a rotary machine, the tandem gas seal comprising:
two sealing stages for mounting axially adjacent to one another on a machine rotor, wherein the two stages are totally separable from one another and each of the two stages is capable of functioning as a seal when separated from each other.
2. The tandem gas seal assembly of claim 1, further comprising:
mating formations formed at adjacent axial ends of the two sealing stages to maintain the two stages in axial alignment with one another.
3. The tandem gas seal assembly of claim 2, wherein the mating formations include an annular collar projecting axially from an axial end of a first stage of the two sealing stages and the annual collar fitting over a cylindrical end region of a second stage of the two sealing stages.
4. The tandem gas seal assembly of claim 3, further comprising:
means for effecting a gas tight seal between the mating formations of the two sealing stages.
5. The tandem gas seal assembly of claim 1, wherein each of the two sealing stages is dynamically balanced separately from the other of the two sealing stages.
6. The tandem gas seal assembly of claim 1, wherein the two sealing stages directly abut one another and are retained on the rotor by means of a lock nut applying an axial force to only an outer of the two sealing stages.

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7. A rotary machine comprising:
 - a rotor;
 - a casing; and
 - a tandem gas seal for forming a seal between a rotor and a casing of a rotary machine, the tandem gas seal including:
 - two sealing stages for mounting axially adjacent to one another on a machine rotor, wherein the two stages are totally separable from one another and each of the two stages is capable of functioning as a seal when separated from each other.
8. The rotary machine of claim 7, wherein the tandem gas seal further comprises:
 - mating formations formed at adjacent axial ends of the two sealing stages to maintain the two stages in axial alignment with one another.
9. The rotary machine of claim 8, wherein the mating formations include an annular collar projecting axially from an axial end of a first stage of the two sealing stages and the annular collar fitting over a cylindrical end region of a second stage of the two sealing stages.
10. The rotary machine of claim 9, wherein the tandem gas seal further comprises:
 - means for effecting a gas tight seal between the mating formations of the two sealing stages.
11. The rotary machine of claim 7, wherein each of the two sealing stages is dynamically balanced separately from the other of the two sealing stages.

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12. The rotary machine of claim 7, wherein the two sealing stages directly abut one another and are retained on the rotor by means of a lock nut applying an axial force to only an outer of the two sealing stages.

13. A tandem gas seal assembly for forming a seal between a rotor and a casing of a rotary machine, the tandem gas seal comprising:

a first sealing stage and a second sealing stage, where each of the first sealing stage and the second sealing stage are adapted for mounting axially adjacent to one another on a machine rotor,

wherein each of the first sealing stage and the second sealing stage are totally separable from one another, and

wherein each of the first sealing stage and the second sealing stage are capable of functioning as a seal when separated from each other.

14. The tandem gas seal assembly of claim 13, further comprising:

mating formations formed at adjacent axial ends of the first sealing stage and the second sealing stage to maintain each stage in axial alignment with one another.

15. The tandem gas seal assembly of claim 14, wherein the mating formations include an annular collar projecting axially from an axial end of the first sealing stage and the annular collar fitting over a cylindrical end region of a second sealing stage.

16. The tandem gas seal assembly of claim 15, further comprising:

means for effecting a gas tight seal between the mating formations of the first sealing stage and the second sealing stage.

17. The tandem gas seal assembly of claim 13, wherein the first sealing stage is dynamically balanced separately from second sealing stage.

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18. The tandem gas seal assembly of claim 13, wherein the first sealing stage and the second sealing stage are directly abut one another and are retained on the rotor by means of a lock nut applying an axial force to only an outer of the first second sealing stage and the second sealing stage.